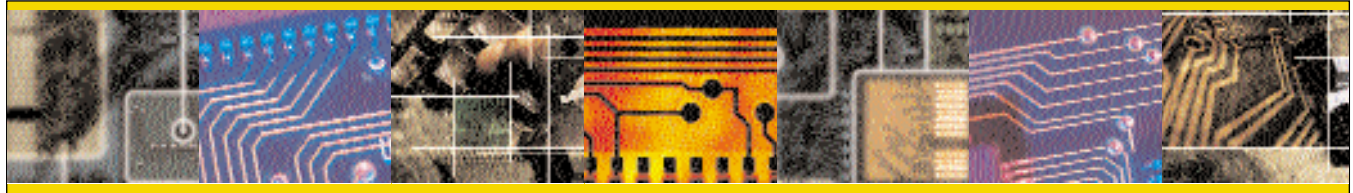


SourcePoint™ for Intel®

SourcePoint™ is American Arium's flagship software interface to our debug hardware. Designed to support platforms that incorporate Intel IA-32 and IA-64 processors, the software is easy to use and offers superb visibility to your code and its execution. Providing the means to initiate run control and, optionally, trace functionality (depending on the Arium hardware), SourcePoint is continually updated and refined for seamless operation in multiple environments. The tight integration of the hardware and software, combined with so many unique and exceptionally robust features, makes our tools one of the best debug solutions on the market today.



Code Window

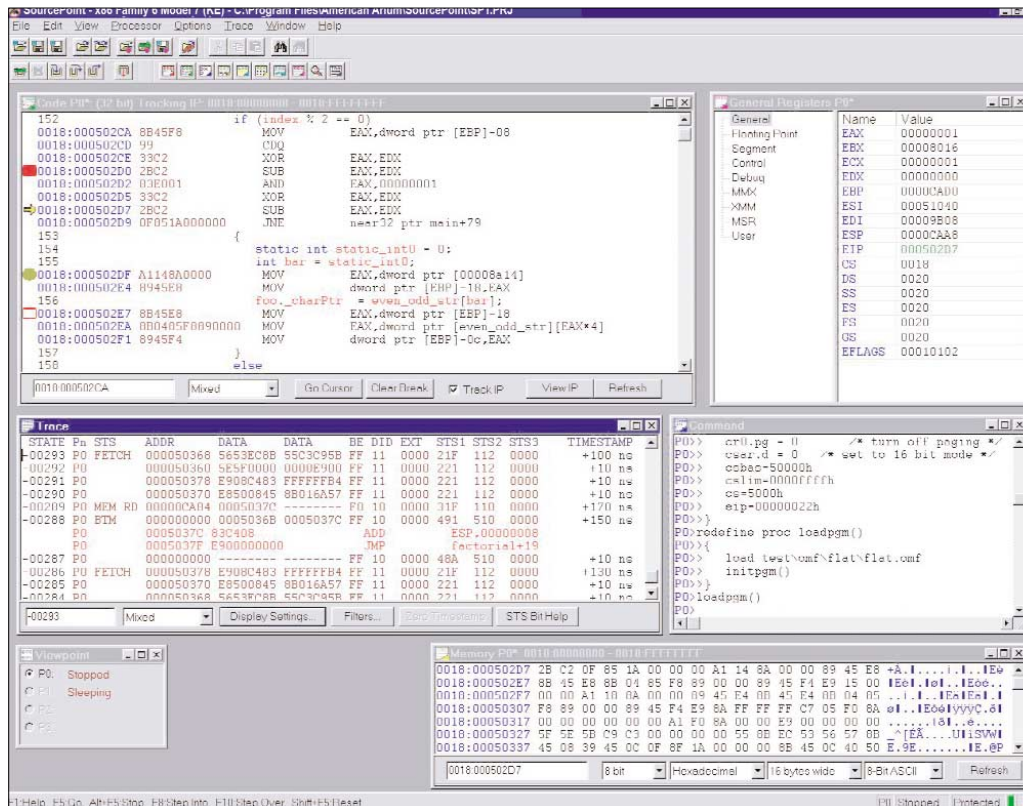
- Displays C and C++ source, assembly code, comments, symbols, and breakpoints
- Display modes easily selected
- Step in C and/or assembly code
- Set breakpoints from this window

Breakpoints Window

- Set, edit, remove, enable, and disable breakpoints
- Set qualifiers*
- Determine where the buffer begins to fill**

Registers Window

- Displays processor registers
- Registers can be edited; values change color
- Flyovers show labeled bit fields
- Allows user-defined register groups



Symbols Window

- Access to all symbols and source code
- Composite variables, including arrays, structures, and unions, expandable to show their sub-elements
- Watch tabs hold user-defined variables, registers, and expressions; values re-evaluated each time processor stops or steps

Viewpoint Window

- Lets you view the state of different processors within a system

Trace Window*

- Provides record of real-time ETM events; data can be used to determine exact path of code execution
- In multi-processor environments, disassembled code displayed using different color for each processor

Command Window

- Gives you robust C-like commands for run control, loop execution, data and array variable use, file I/O access, and more
- Write sophisticated macros for testing or set up

Devices Window

- Lets you define a grid in which to view memory-mapped I/O devices and related registers and areas of memory
- * Lets you view everything on one window, saving space on your screen

*TRC units only

**TRC-20 only



SourcePoint Software

-The Basics-

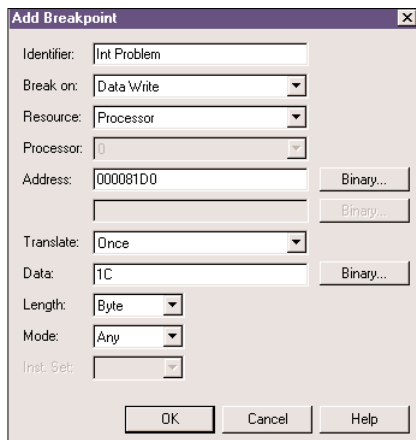
SourcePoint is a Microsoft® Windows®-based application designed to support Intel processors. Specifically, it supports custom built platforms using Intel® Itanium®, Itanium 2, Xeon™, Pentium® 4, Mobile Pentium 4 Processor-M, Pentium II/III, Pentium II/III Xeon, Mobile Pentium II/III, Celeron® and Pentium processors.

Supports a wide range of tool-chains. Designed to debug code written in assembly language and C and C++ source code, SourcePoint supports a wide range of tool chains.

These include:

- Wind River® Tornado® II C/C++
- Microsoft Visual C/C++®
- Borland® C
- CAD-UL C
- GNU C/C++
- Metaware® C

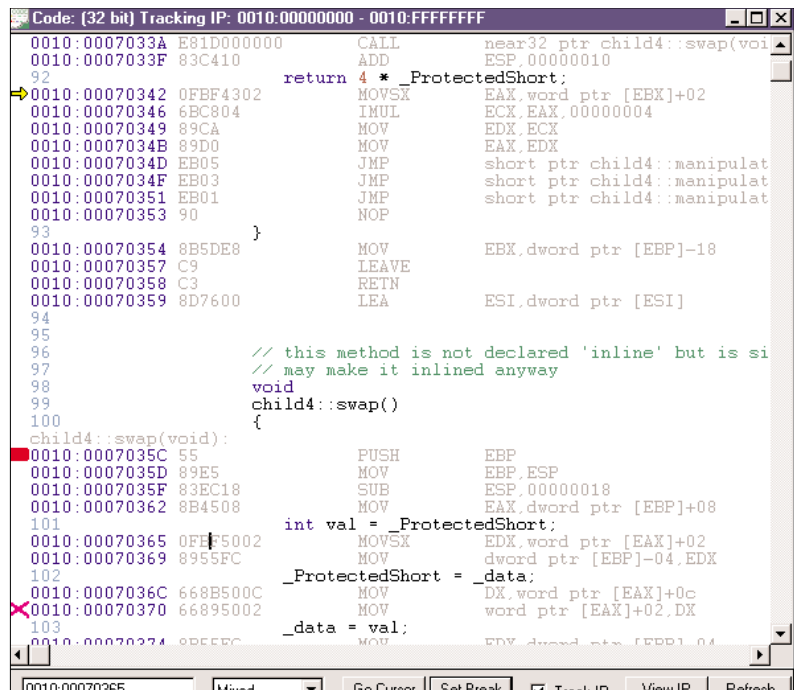
Excellent run control. The SourcePoint GUI provides exceptional run control with stop, go, and reset commands and multiple single-stepping options. It accurately executes breakpoints you can easily add or edit.



Add Breakpoint dialog box

Breakpointing lets you methodically isolate select lines of code and zero in on hangs, eliminating much of the guesswork of the debug process.

One interface application for all Arium emulators. Finally, SourcePoint

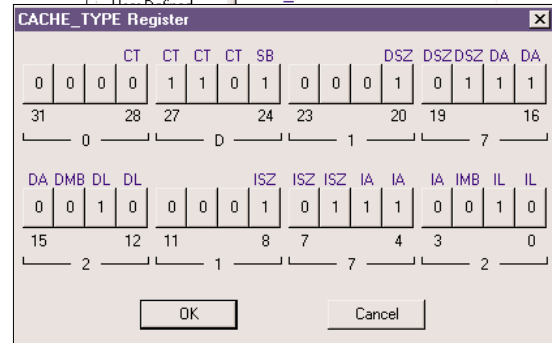
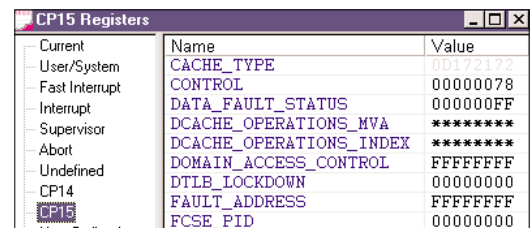


Code window

- Displays C or C++ source or assembly code, or allows you to see both; also displays comments, symbols, and breakpoints
- Allows single stepping (in C or assembly code)
- Offers breakpoint setting from this window
- Makes register or variable values visible via flyover help
- Works with multi-processor systems via multiple Code windows

Register window

- Expands to show individual fields
- Allows customization of register lists
- Shows full register name and subfields via flyover help
- Values take on a different color when they change



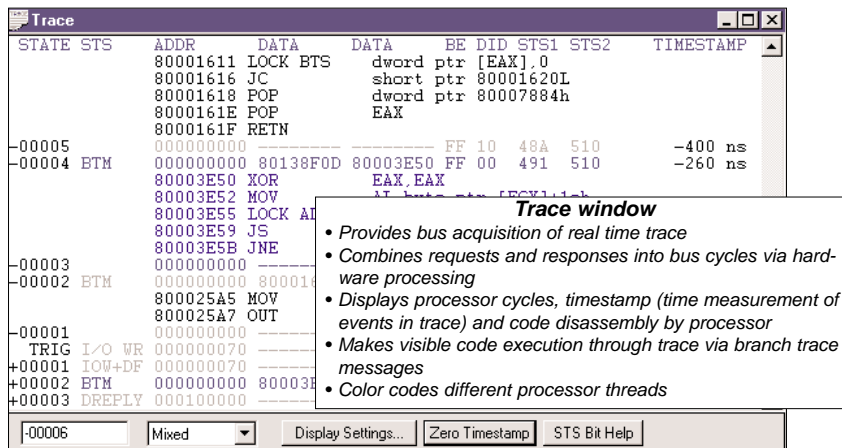
software is designed to work with all Arium hardware, from the latest Intel Itanium 2 processors through our Intel Pentium processor-supported legacy units. You don't have to learn new software every time you buy a unit.

data to control its storage data into the trace buffer. For example, you may choose to *Record only BTM cycles* or *Record BTMs on Q1 and stop on Q2*, etc.

When setting a bus breakpoint, you can select the way in which the breakpoints stop the processor. You can choose, for example, to break at *T1 then T2 then T3 then T4*. Or you can

- A Unique Tool -

Setting Bus Breaks. In the Breakpoints window you can qualify



choose to break at *T1* and not *T2* or to Count off *T1*. There are a number of options.

Unparalleled trace. A recognized leader in this arena, American Arium has been developing and improving trace capability for more than a decade. The result: SourcePoint is one of the few debug software packages with integrated, real time trace. Its value lies in with the way the hardware captures instructions and the intuitive way SourcePoint displays them, giving you a better understanding of how and when your code executed. Combined with excellent run control functionality, SourcePoint trace reduces the tedious, iterative process and associated time commonly encountered in the debug process.

SourcePoint offers a number of unique features in trace. For example, trace options can be refined via the trace filtering command, letting you choose to view only certain types of instructions (e.g., BTMs) or groups of instructions. Refining the process further, you can view instructions within user-defined address ranges.

Multiple processor awareness. With SourcePoint, connect to any American Arium ECM or TRC base unit, and you can simultaneously track and display multiple processors through one interface at any given time. No more resetting your system every time you want to view a different processor or using multiple instances of your debugger. In SourcePoint, a Viewpoint window indi-

cates detected processors and their current state.

In these multi-processor situations, SourcePoint displays windows for whichever processor is running. However, you can also direct it to display Code and Register windows for the other processors on the target board. Windows can be left open as you move around the target for easy reference.

Robust command language.

SourcePoint has been built to include an exceptionally robust command language. In addition to excellent run control commands, other commands let you execute loops, use data and array variables, access file I/O and so

much more. Few competitors can match it.

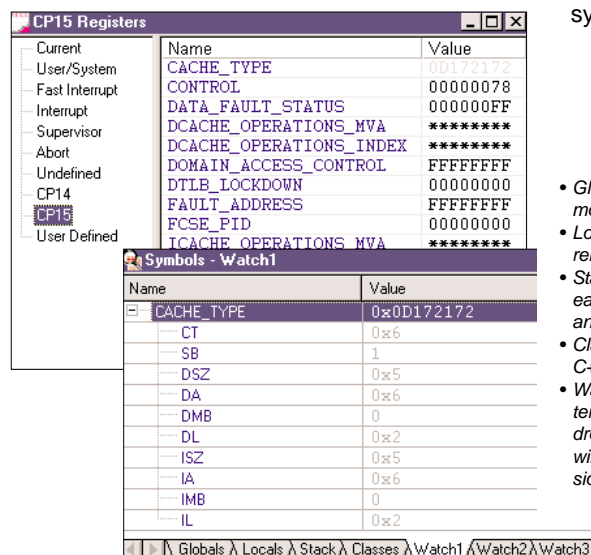
Intuitive presentation of code.

SourcePoint's GUI design offers exceptional visibility to your code and its execution. Especially with processors using Intel X86 architecture, SourcePoint displays executed code in an intuitive fashion; it doesn't just show executed instructions straight out of the hardware.

Other display features just make life easier. Code windows allow you to display source or assembly code. Or you can choose "mixed," a mode that shows them in juxtaposition to one another. The Memory window offers a number of viewing combinations, including size, display base, and ASCII options. Register windows display register types, names, and values. Both Memory and Register windows can be edited; edited items are displayed in a different color as a reminder of their change.

- Designed With You In Mind -

Symbols window. The Symbols window not only displays predetermined files, locals, and stacks, but provides for three Watch tabs, all of which can be used to create customized lists. You can display specific register names and values. You can also drag and drop variables, expressions, and symbols into them. These



Symbols window

- **Globals tab** - shows all programs, modules, functions, and variables
- **Locals tab** - shows variables in current stack frame
- **Stack tab** - shows function call stack; each level expandable to arguments and automatic variables
- **Classes tab** - browse through all your C++ classes
- **Watch tabs** - contain variables, registers, expressions; you can drag and drop registers/symbols from other windows or create your own expressions

SourcePoint Software

Key Features

Powerful

- Supports Intel IA-32 and IA-64 architecture.
- Exceptional real time, integrated trace capabilities.
- C or C++ source, symbol, and mixed views
- Supports .axf, .elf, .hex, .sym, and .bin file formats
- Robust command language
- Multi-processor and multi-cluster support
- Excellent run control

Easy to Use

- Highly intuitive; uses many Microsoft Windows protocols
- Easy to qualify bus breakpoints (e.g., If T1, then T2)
- User-defined Devices window shows memory mapped I/O devices and related registers and areas of memory.
- "Auto" page translation gives you instant physical addresses of virtual addresses. A related window shows you all the details in table format.

Customizable

- Watch tabs you build
- Toolbars you modify
- Macros you create and define
- Screen colors you set

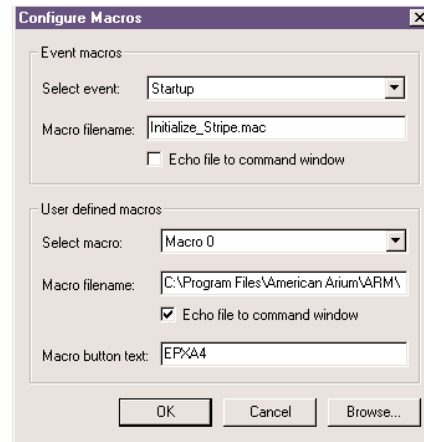
Versatile

- Debugs low level code, device drivers, diagnostics, RTOS, and board support packages
- Supports numerous toolchains, including: Wind River Tornado II C/C++, Microsoft Visual C/C++, Borland C, CAD-UL C, GNU C/C++, and Metaware C toolchains

Devices window

- Lets you define a grid in which to view memory-mapped I/O devices and related registers and areas of memory.
- Lets you view everything in one window, saving space on your screen.

Watch tabs can be maintained on your SourcePoint "desktop" as you work through your code, minimizing space and keeping what you need most close at hand.

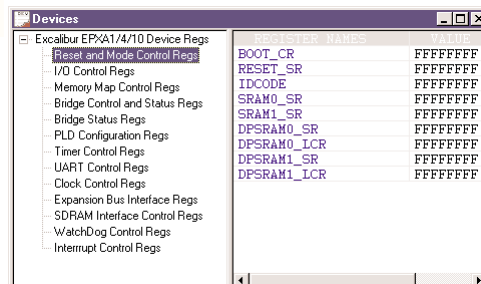


Macro dialog box

Macros. SourcePoint also lets you write your own macros, which helps automate tasks. As a result, there's a high degree of compatibility; macros written for other programs in this language can be used in SourcePoint and vice versa.

You can choose to link up to 10 user-defined macros to icon buttons on the SourcePoint toolbar, another option to help you streamline your debug process.

Devices window. One of the newer features in SourcePoint, the Devices window lets you define a grid to view memory-mapped I/O devices and relat-



ed registers and areas of memory. If you have six devices you want to track, you no longer have to keep six views open. Just place the information in the Devices window.

- There's More -

SourcePoint offers a host of other features. Little things, such as, if you right click on an address or a pointer, you can open a Code window that displays the code at that express location. Big things, like working with Agilent logic analyzers to provide full trace capability and the same visibility found in our traditional hardware/SourcePoint setups. SourcePoint offers dynamic page translation, REXX support, built-in target and hardware diagnostics, and a suite of self-confidence tests.

SourcePoint is designed to work specifically with American Arium's hardware. It offers a combination of features, flexibility, and ease of use found in no other hardware-assisted debug software on the market today.

-Ordering Information-

SourcePoint for Intel-based targets ships with the following emulators:

- ECM-30** For IA-64-class processors
- TRC-20** For IA-32-class processors
- ECM-20** For IA-32-class processors
- TRC-6** For Intel P6-class processors
- ECM-S2** For Intel P6-class processors

